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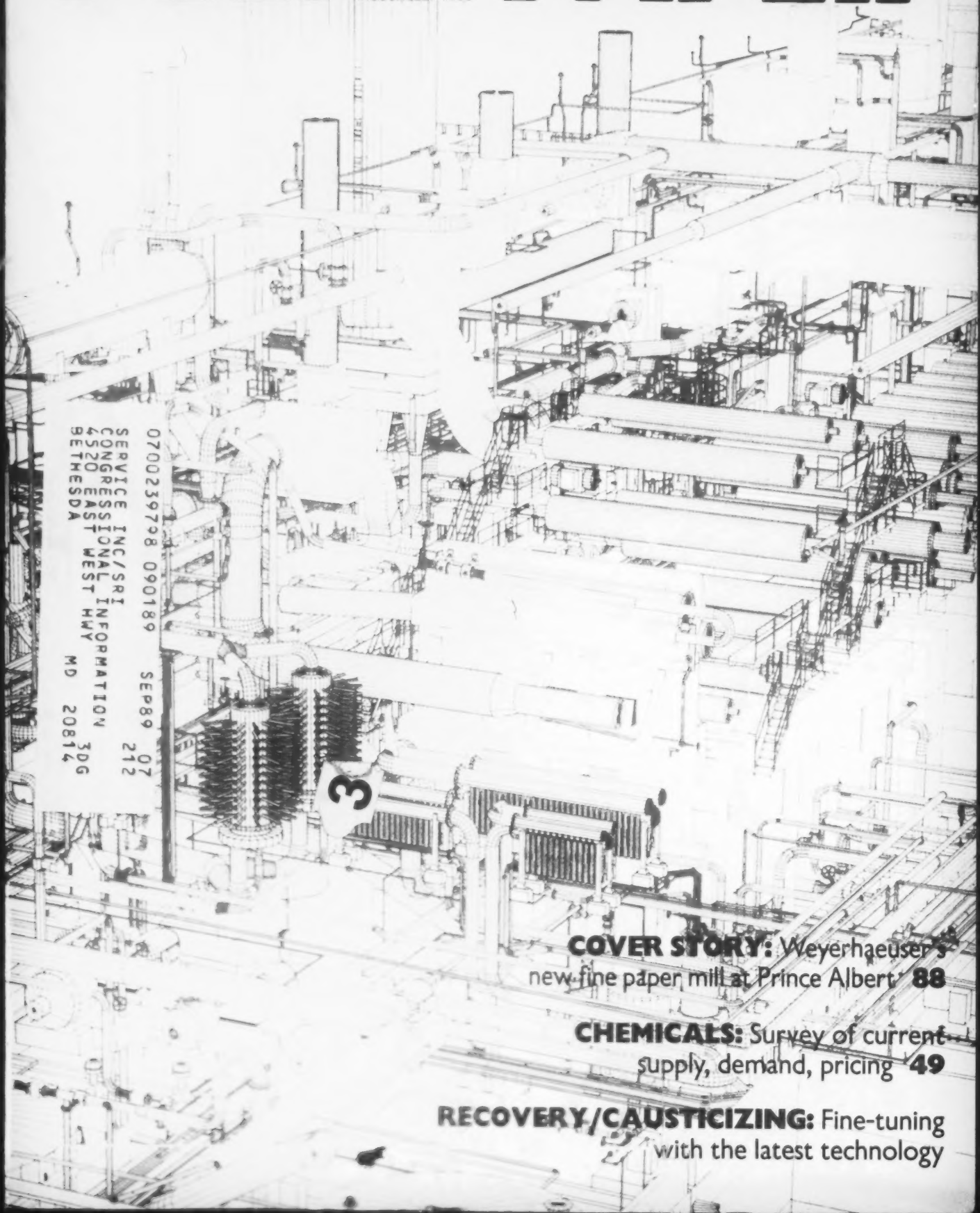
PULP & PAPER

November 1988



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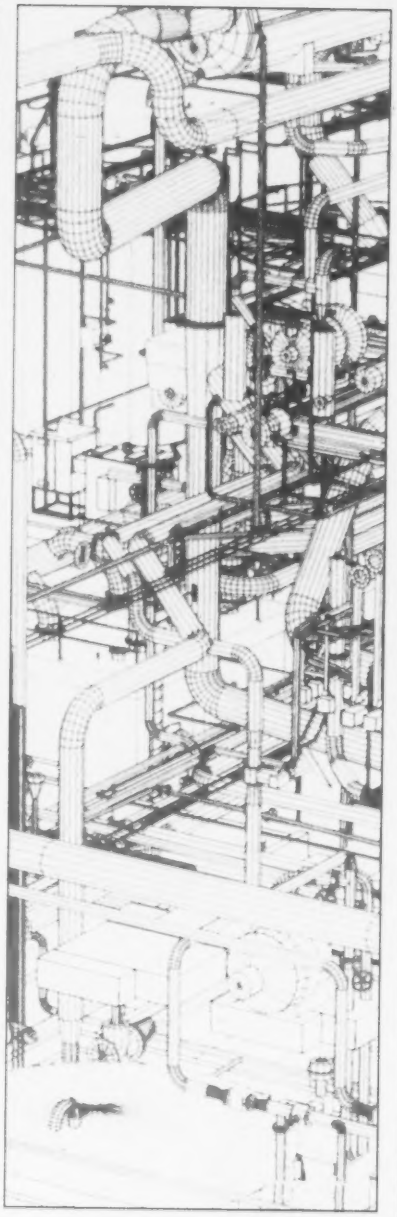

THE COVER

Computer-based, three-dimensional rendering of Weyerhaeuser Canada's new fine paper machine at Prince Albert, Sask. This expansion involved the most extensive computer modeling ever utilized on a pulp and paper project. See story on page 88. **(Photo courtesy of Construction Systems Associates Inc., Marietta, Ga.)**

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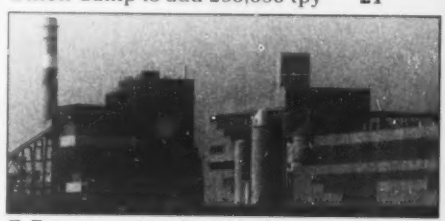

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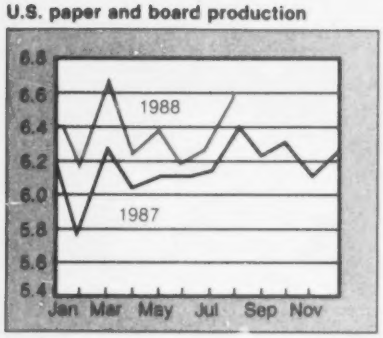
U.S. paper and board production



U.S. production of paper and paperboard totaled 6.6 million tons in August, an increase of just 1.5% over the same month in 1987, according to the American Paper Institute. While demand continues at record levels for most grades, the rate of growth has definitely slacked off since earlier this year. While paper remained strong, paperboard production for the month was down 0.5% compared with August 1987. After seasonal adjustments, paperboard production was up 2.6% through the first eight months, while paper climbed 4.5% over the same period.

Among major grades, printing and writing papers continued to be very strong, led by big increases in uncoated groundwood and coated papers. Coated paper demand is so strong that the year-to-date import total was up 32% from last year, the API reported. In the paperboard sector, however, only semichemical medium posted an increase in August over last year.

Canadian newsprint shipments climbed 7.9% in August to 847,000 metric tons, as U.S. imports jumped 8.3%. Woodpulp exports declined 3.4% compared with a year earlier, however. Operating rates for the month were 100% for newsprint mills and 99% for woodpulp. ■

	Latest month (000 short tons)		% change from year ago	Annualized year-to-date (000 short tons)	% change from year ago
PAPER & PAPERBOARD PRODUCTION[1]					
Newsprint	August	509	2.2	5,966	3.1
Uncoated groundwood (s)	August	149	17.3	1,591	4.5
Coated paper (s)	August	644	7.9	7,421	10.1
Uncoated free sheet (s)	August	966	1.6	11,332	4.7
Other printing/writing	August	122	5.2	1,504	10.3
Total packaging and other paper (s)	August	429	3.1	5,160	2.3
Tissue	August	460	0.7	5,454	3.7
Total paper	**August**	**3,278**	**3.6**	**38,428**	**5.0**
Unbleached kraft paperboard	August	1,666	-0.2	19,438	3.2
Semichemical medium	August	494	2.7	5,718	1.8
Bleached paperboard	August	395	-0.5	4,511	1.1
Recycled paperboard	August	730	-2.9	8,863	5.0
Total paperboard	**August**	**3,285**	**-0.5**	**38,530**	**3.1**
Total U.S. paper and paperboard output	**August**	**6,563**	**1.5**	**76,957**	**4.0**
PULP, WASTEPAPER & FIBER[2]					
Total U.S. woodpulp production	July	5,212	2.0	60,977	3.0
Market pulp production	July	728	-0.1	8,362	4.5
Wastepaper consumption at paper/board mills	July	1,523	1.0	18,827	4.6
Pulpwood consumption (cords)	July	7,901	-3.6	95,301	1.4
CONVERTED PRODUCTS STATISTICS[3]					
Corrugated box shipments (billion ft²)	August	26.878	7.3	205.038[6]	3.7
Containerboard inventories at U.S. box plants and mills	Aug. 1	2,725	9.1		
INTERNATIONAL TRADE[2]					
U.S. paper imports (including products)	July	1,048	4.4	12,817	3.7
Imports of Canadian newsprint	July	708	8.3	8,562[6]	-1.4
U.S. paper exports (including products)	July	431	-1.1	5,718	11.1
Exports of unbleached kraft linerboard	July	168	-9.7	2,139	-5.0
Exports of woodpulp	July	392	-15.3	5,314	9.4
Norscan pulp inventories[4]	Aug. 31	845	-19.4		
Norscan pulp operating rates[4]	August	100%	102%	96%	99%
CANADIAN STATISTICS[5] *(reported in metric tons)*					
Total newsprint shipments	August	847	7.9	6,516[6]	1.7
Operating rates	August	100%	98%	99%	97%
Inventories held by U.S. consumers	Aug. 31	1,605	10.2		
Other paper/board shipments	August	560	4.1	4,463	5.9
Woodpulp shipments (export only)	August	660	-3.4	5,382	1.3
Operating rates	August	99%	99%	97%	98%

1. American Paper Institute. 2. API, Bureau of Census, American Pulpwood Assn. 3. Fibre Box Assn., Paperboard Packaging Council. 4. North American/Scandinavian paper-grade market pulp. 5. Canadian Pulp & Paper Assn. 6. Not annualized. (s) = Shipments.

Kraft paper: Bleached and multiwall grades show strength, but grocery sack paper continues slide

Grade Structure: Kraft packaging paper is normally divided into four end uses: bag and sack, shipping sack, wrapping, and other converting. Bag and sack paper is the largest category, accounting for about 61% of total shipments, and is followed by multiwall shipping sacks, 24%; converting, 12%; and wrapping, 3%. Basis weights for bag and sack paper range from 30 lb to 80 lb/3,000 ft², with the lower basis weights used for small grocery and merchandise bags, while 70-lb paper is commonly used for grocery carryout sacks. Multiwall shipping sack paper is 50 lb or 60 lb. Extensible or air-dried kraft paper may be used for shipping sacks requiring extra strength.

Production/capacity: Unbleached kraft paper (UKP) shipments declined 6.9% to 3.1 million tons in 1987, led by a 13.8% decline in grocery bag and sack paper shipments. Although shipments of kraft paper dropped sharply, operating rates remained high since most of the swing machines in the industry produced a substantial amount of linerboard, thus eliminating any excess capacity. Because many of these swing machines produced more linerboard than kraft paper, the actual kraft paper capacity of the industry is likely to be less than shown in the American Paper Institute's annual capacity survey. Total bleached kraft paper shipments remained flat at about 485,000 tons.

For the first eight months of 1988, UKP shipments were only 2.8% lower than the year before. While grocery bag and sack shipments continued declining, shipments of multiwall shipping sack paper showed a strong gain. Operating rates have exceeded 95% during most of the year because linerboard markets have remained firm. Also, Gilman Paper Co. converted 86,000 tons of UKP capacity to bleached paper at its St. Marys, Ga., mill this year.

Shipments of bleached and specialty grades of kraft paper were flat in 1987 but have improved this year. Production of bleached and specialty grades is up nearly 8% in the first eight months, and the markets have been extremely tight. The outlook for these grades is very good, and several companies, in addition to Gilman, have announced expansion plans to capitalize on these markets. Longview Fibre Co. plans to build a new 100,000-tpy kraft paper machine at its Longview, Wash., mill to produce both bleached and unbleached lightweight bag and specialty kraft paper grades by late 1989. Champion International plans to rebuild its 100,000-tpy specialty bleached kraft paper machine at Pensacola, Fla., in 1989 to focus on lightweight grades.

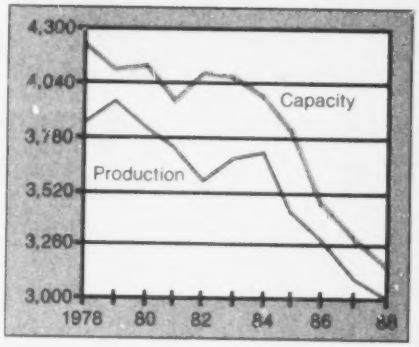
Market segments: Grocery bag and sack paper shipments are expected to drop about 7% in both 1988 and 1989. In 1987, volume was about 1.7 million tons. Losses to plastics continue because plastic grocery sacks sell at about a 50% discount to kraft paper sacks and now account for 40% to 50% of the total volume of bags and sacks used in supermarkets. Shipments of other bags and sacks declined about 12% in 1987 to 80,000 tons, and losses in 1988 and 1989 should be 10%. Kraft paper still retains an important market niche in small retail and fast-food carryout bags.

Multiwall shipping sack paper volume increased about 5% to 785,000 tons in 1987 and is expected to increase 8% in 1988, reflecting strength in the country's agricultural, construction, and industrial markets. Economic uncertainty about 1989 could result in slightly lower shipments of multiwall paper next year.

Pricing: UKP prices have tracked linerboard prices quite closely during the past two years. Producers raised prices $30/ton for grocery and multiwall paper and $15 to $20 for lightweight grades in the first quarter of 1988. Prices are not expected to increase again until early 1989. Heavyweight (70-lb) grocery sack paper prices are currently $455 [illegible] $465/ton. Multiwall (50-lb) kr[illegible] paper prices are $510 to $520/to[illegible]

Year-end price history for [illegible]-lb grocery sack paper: 1980, $28[illegible]; 1981, $300; 1982, $240; 1983, $280; 1984, $330; 1985, $300; 1986, $365; 1987, $400. Multiwall sack paper (50-lb): 1980, $375; 1981, $405; 1982, $360; 1983, $390; 1984, $410; 1985, $360; 1986, $400; 1987, $460.

SUPPLY/DEMAND (000 tons)



FORECAST (000 tons)

	1987	1988e	1989e
Shipments	3,075	3,000	2,880
Capacity	3,270	3,150	3,000
Utilization rate	94.0	95.2	96.0
Imports	168	165	155
Exports	89	100	95
Apparent U.S. consumption	3,154	3,065	2,940
lb/capita	25.9	25.0	23.0
GNP ratio[1]	0.82	0.78	0.72

e = Estimate.
1. 1,000 tons/billion $ real GNP.

TOP U.S. PRODUCERS (000 tpy)

	Annual capacity	Market share (%)
1. Stone Container	773	24.5
2. Union Camp	477	15.1
3. Georgia-Pacific	340	10.8
4. Longview Fibre	325	10.3
5. Gaylord Container[1]	270	8.6
6. International Paper	260	8.3
7. Champion International	195	6.2
8. Chesapeake	115	3.7
9. Port Townsend	100	3.2
10. Gilman[2]	73	2.3

Market share of top five companies: **69.4%**
Market share of top ten companies: **93.0%**
Total U.S. capacity (1988): **3.150 million short tons**

1. Reflects merger of Gaylord Container and Mid-America Packaging.
2. Converted 86,000 tpy from unbleached to bleached kraft paper.

to be divided between business papers, forms, and offset grades. Planned average speed on 38-lb is 3,000 fpm, and the drive and machine components are balanced for 3,500 fpm. Wire width is 348 in., with a winder trim of 314 in. Overall average efficiency is expected to be 83%.

The planned filler content of the alkaline-size sheet is 11%; however, the system is capable of producing a sheet up to 18% content. The main filler is PCC. Three high-density chests—two 300-ton for separate storage of hardwood and softwood and one 400-ton for transition pulp—store furnish from the pulp mill. Since the single-line pulp mill swings between hardwood and softwood (typically ten days on softwood and five days on aspen), it is necessary to supplement the machine furnish with baled pulp. A bale pulper was installed in the new paper warehouse for this purpose.

The Valmet Sym-Former forming section is conventional. The headbox is Valmet's Sym-Flo design. After

Demand for uncoated free-sheet grades to grow faster than capacity

Rising demand for office papers is expected to continue to push up production of uncoated free-sheet grades at U.S. mills, which grew 5.5% in 1987 from a year earlier. This is a slower but still healthy growth following the higher 7.7% increase in 1986.

Demand will be strong in the major uses (office bond, forms bond, reprographic, tablet, and envelope), printing papers (offset, cover, and text), and miscellaneous (technical, papeterie, or colored school). Gene Cartledge, chairman and CEO of Union Camp Corp., said recently that the company expects demand for uncoated business grades to grow in the range of 400,000 tpy to 500,000 tpy for the next decade. Many producers such as Union Camp, Weyerhaeuser Co., and George-Pacific Corp. are bringing large machines online over the next few years. Capacity grew 4.5% in 1987, according to the American Paper Institute, which expects about half that growth in 1988.

Domtar Inc., Windsor, Que., brought online its first of two 230,000-metric-tpy machines in 1987. The second machine will be completed in early 1989. This year Weyco brought online its own 210,000 metric-tpy machine in Prince Albert, Sask.

In the U.S., capacity gains have come through even larger expansions, including G-P in Port Hudson, La., (290,000 tpy); Hammermill Paper Co., which brought up a new machine at its Riverdale mill in Selma, Ala., in 1986 and is adding another 45,000 tpy through machine speedups; Champion International's conversion to 260,000 tpy of uncoated free-sheet in Pensacola, Fla.; and Union Camp's decision to go ahead with installation of a second paper machine at Eastover, S.C. The 235,000-tpy machine is scheduled for completion in mid-1991. Capacity of the first paper machine will be increased to nearly 300,000 tpy. Total cost of the Union Camp project, including pulp mill expansion, is expected to reach $650 million to $700 million.

In addition to Domtar's second Windsor machine, 1989 startups include Canadian Pacific Forest Products Ltd. (formerly Great Lakes Forest Products Ltd.) in Dryden, Ont., (170,000 metric tpy) and G-P's second 290,000-short-tpy machine at Port Hudson. Also,

New U.S. and Canadian uncoated free-sheet capacity through 1992.

Company, U.S.	Location	Annual capacity (short tons)	Year
Georgia-Pacific Corp.	Port Hudson, La.	290,000	1988
International Paper Co.	Various	350,000	1988-90
Willamette Industries Inc.	Bennettsville, S.C.	200,000	1990
Champion International[1]	Quinnesec, Mich.	58,000 net	1990-91
Boise Cascade Corp.	International Falls, Minn.	300,000	1990
Union Camp Corp.[2]	Eastover, S.C.	60,000	1991
Union Camp Corp.[3]	Eastover, S.C.	240,000	1991
Great Northern Nekoosa Corp.[4]	Ashdown, Ark.	300,000+	1990
Weyerhaeuser Paper Co.[4]	Columbus, Miss.	200,000	n.a.
Bowater Southern Paper Co.	Calhoun, Tenn.	Under study	n.a.
Company, Canada		**(metric tons)**	
Weyerhaeuser Canada Ltd.	Prince Albert, Sask.	217,000	1988
Domtar Inc.[5]	Windsor, Que.	160,000	1989
Canadian Pacific Forest Products Ltd.	Dryden, Ont.	175,000	1989
Makin Pulp & Paper Ltd.[2]	Britannia Beach, B.C.	135,000	1989

North American capacities, 1988: **U.S.**—11.780 million short tpy: **Canada**—915,000 metric tpy (estimated).

n.a. = Not available or not applicable.
1. Initially will produce uncoated free-sheet but is designed for coated.
2. Capacity increase on No. 1 paper machine.
3. New lightweight paper machine.
4. Machine announced or discussed in principle but plans not finalized.
5. During 1986-89 period, Domtar will also be shutting down 97,000 tpy of old machines.
6. Uncoated free-sheet and coated free-sheet.
Sources: *Pulp & Paper Week* estimates, American Paper Institute, Canadian Pulp & Paper Assn.

the headbox is a short preforming table, followed by a twin-wire section equipped with a 49-in.-dia open forming table roll for upward dewatering and a multi-foil shoe with high- and low-vacuum compartments for downward dewatering. Four flatboxes, the couch, and wire drive rolls follow on the lower wire.

The sheet is transferred via a 40-in.-dia suction pickup roll to the Sym-Press O-QF section (the "QF" designation stands for quick felting). Both the pickup roll and the 53-in.-dia bottom first press rolls have VK-A378 duplex stainless steel alloy shells. The bottom press roll is rubber-covered and loaded against a Valmet deflection-compensated (swimming), 38.5-in.-dia Sym-Roll, also rubber-covered and equipped with integral gear drive.

The second and third nips consist of additional Sym-Rolls loaded against a 67-in.-dia, granite center roll. Following the third nip is a very short open draw, and the sheet is conveyed to the dryer section with Valmet

International Paper Co. and its Hammermill unit will increase capacity 350,000 tpy through speedups and rebuilds, and Mohawk Paper Mills Inc. will add 15,000 to 20,000 tpy at its Cohoes and Waterford, N.Y., mills.

Outlook still positive. Operating rates at uncoated free-sheet mills are expected to remain between 93% and 96% through the end of 1988 and the first half of 1989. Many analysts are predicting two- or three-percentage-point declines in the second half of 1989, primarily due to an expected economic downturn.

Demand will remain strong through the first half of next year. However, inventory building in response to announcements of price increases will slow some orders.

Imports are expected to advance slightly in 1988 from 1987 but not as much as in 1989, when uncoated free-sheet imports could rise over 35%, compared with an estimated 10% in 1988, sources said.

Pricing continues upward trend. All grades of uncoated free-sheet paper underwent price increases in 1987 and 1988. These increases brought the significant grades of paper—forms bond and offset—to levels at or above their highs of 1984. Most buyers and sellers expected the latest increases to hold and paper to sell near list prices.

Forms bond producers raised their list prices by $50/ton for shipments in October. The hike was led by James River Corp. and followed by Mead Corp. and G-P. The increase put 15-lb forms bond at about $910/ton. Related paper grades rose, including one-time carbonizing (OTC) tissue, which increased approximately 5% to 6% on Oct. 17. Forms bond sold for $753 list in 1981, dropped in 1985 to $600/ton, and then began a steady rise again. Other grades of uncoated free-sheet paper not already slated for price increases could be the subject of additional hikes based on fourth-quarter pulp price hikes.

Markets are expanding. The best markets for uncoated free-sheet grades are bond, mimeo, duplicating, and reprographic (BMDX), which account for 24%; forms, 21%; offset printing, 25%; envelope, 11%; tablet, 4%; carbonless, 6%; and other, 9%.

In 1987, slightly more than 2.7 million tons of uncoated offset paper were produced in the U.S. Shipments to book publishers were 560,000 tons, or 60% of the 930,000 tons of paper shipped to book publishers. In contrast, uncoated groundwood represented 7.5%, and coated grades accounted for 32%.

Actual consumption of uncoated free-sheet paper for books rose a dramatic 25.2% from 1982 to 1986, slightly higher than the 24.9% gain made by coated papers and in strong contrast to uncoated groundwoods, which fell 15.8% during those years. However, uncoated free-sheet experienced a small 1.7% decline from 1986 to 1987, while coated free-sheet gained 1% and uncoated groundwood gained almost 2.5%.

Shipments to commercial printers of offset and other uncoated free-sheet paper gained more than 8% in 1987 from a year earlier. This compares with coated, which gained more than 15%, and uncoated groundwood, which lost 14%.

Demand for cover and text grades—heavier than offset grades—has grown by about 4.1%/year since 1980, reaching somewhere near 300,000 tons in 1987. Text papers represented about 65% of this market, at over 190,000 tons in 1987. Also in 1987, annual shipments of bond and writing were 2.6 million tons, a healthy 10.5% increase from the year before.

Use of computer printers is expected to continue to grow as a major market for cut-size bond and copy papers, though forms bond growth may slow. Richard Norton, director of Imaging Supplies Industry Services and Copying & Duplicating Industry Services for Dataquest Inc., predicts that overall demand for cut-size papers used for computer printers and copy machines will grow 20.6% from 393,000 tons in 1986 to 1 million tons in 1991.

Of cut-size paper end uses, page (laser) printers accounted for about 288,000 tons of paper in the U.S. in 1986 and will rise to 786,000 tons by 1991. Copier paper will post a much slower growth of just 4.0% over the five-year period, from slightly under 2.0 million tons in 1986 to almost 2.4 million tons in 1991.

For non-cut-size paper, use of stock continuous forms will grow at 7%/year, from 1.7 million tons in 1986 to 2.4 million tons in 1991, according to Norton. Its sister paper, custom continuous forms, will show almost zero growth over the five years, staying at about 1.2 million tons used annually, Norton said.

Of all paper shipments in 1987 to U.S. business forms converters, uncoated free-sheet bond represented 92%, reaching almost 2.8 million tons, while uncoated groundwood, at 228,000 tons, made up the balance, except for the minute (0.2%) coated bond. The groundwood segment began to decline at the beginning of the 1980s, falling about 4.5% between 1982 and 1986, and dropped another 6% in 1987. At the same time, uncoated free-sheet for forms rose almost 44%, gaining an additional 3% in 1987.

Also used in multipart continuous forms is carbonless paper. Basestock for carbonless coating represents a market of almost 600,000 tpy. It grew almost 45.4% from 1982 through 1986 and over 10% from 1986 to 1987. In contrast, OTC production was just under 110,000 tons in 1987, down more than 7% from 1986. A major converter expects carbonless papers to move from about 45% of the multipart forms market to at least 60% in several years.

—Rob Galin, News Editor